

# Seattle Public Utilities

## Water Capital Improvement Program History and Status

*June 10, 2011*



# Looking Backward

## SPU Water System (circa 1990)

- Two large, unfiltered surface supplies
- 10 open distribution reservoirs
- Single pipeline from Tolt watershed
- 1950s water quality lab
- 1970s control center
- Potential ESA listings (Chinook Salmon, Marbled Murrelet, Northern Spotted Owl)
- Projected need for new supply

# SPU Water System

## Four Major Investment Areas

- **Supply Certainty**
- **Water Quality and Treatment**
- **Transmission**
- **Distribution**

# Supply Certainty

## Cedar River Watershed HCP

Provides legal certainty under the Endangered Species Act for the City's continued operations within the Cedar River Watershed.

- \$100 million over 50 years -- \$60 million in the first decade
- Approximately 30 capital projects and 60 O&M activities in three areas:
  - Management of instream flows for people and fish
  - Forest and land conservation activities
  - Mitigation for the blockage of salmon and steelhead

# Drinking Water Quality

## Water Quality Lab (1999)



**Old lab**  
(Beacon Hill Reservoir)

**New lab in SODO area**  
(former Starbucks warehouse)



# Drinking Water Quality

## Reservoir Covering Program

### Drivers:

- State Dept of Health Regulations (1994)
- Post 9/11 Security

Secondary benefit – 70 acres with park and open space potential



Beacon Reservoir  
Constructed in 1911



Beacon Reservoir  
Covering Completed 2009

# Drinking Water Quality

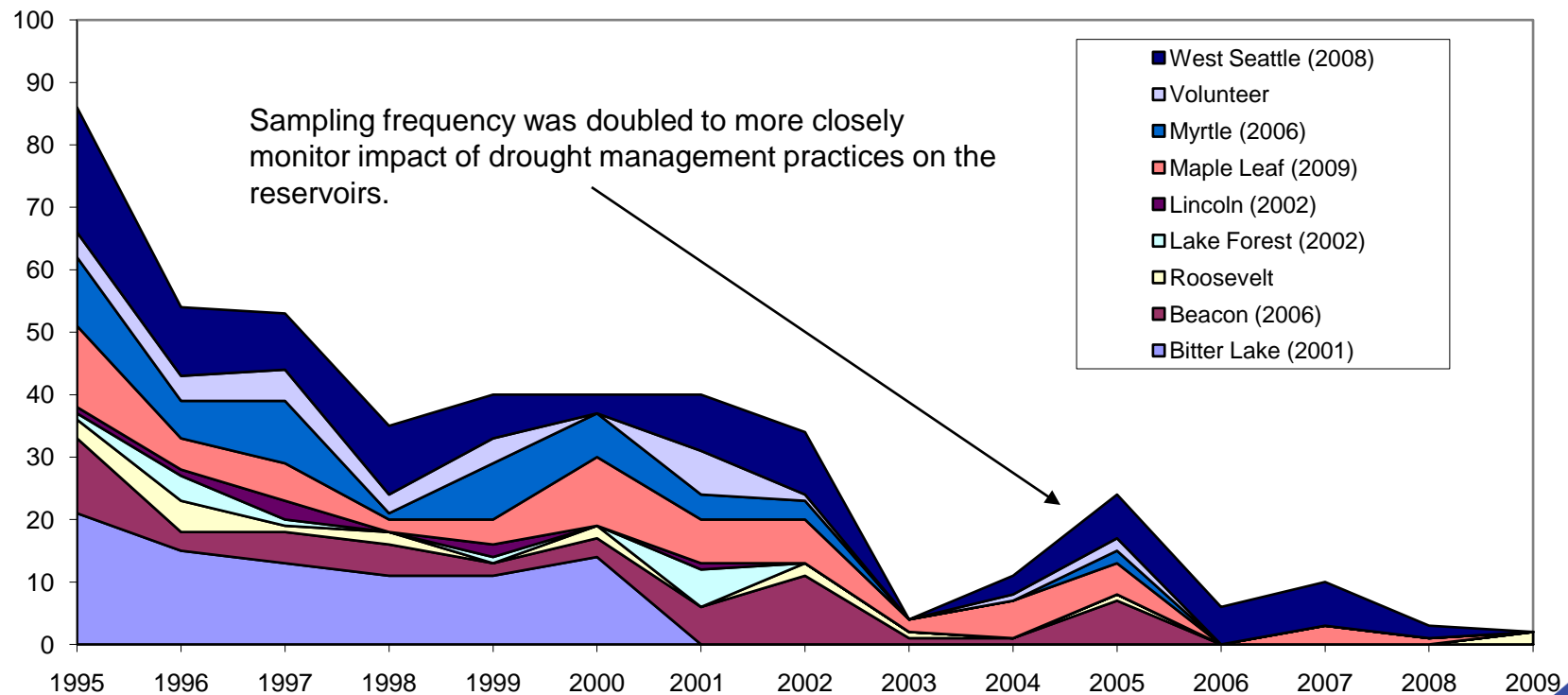
## Reservoir Covering Program Status

Project	Completion	Cost
Magnolia	1994	\$8 Million
Lake Forest Park	2001	\$4 Million
Bitter Lake	2002	\$19 Million
Lincoln	2004	\$8 Million
Beacon	2010	\$42 Million
Myrtle	2010	\$12 Million
West Seattle	2011	\$33 Million
Maple Leaf	2012	\$47 Million
Volunteer	2016	TBD

# Drinking Water Quality

## Reservoir Covering Program

Number of Positive Fecal Coliform Samples  
from Seattle's Open Reservoirs



# Source Water Treatment

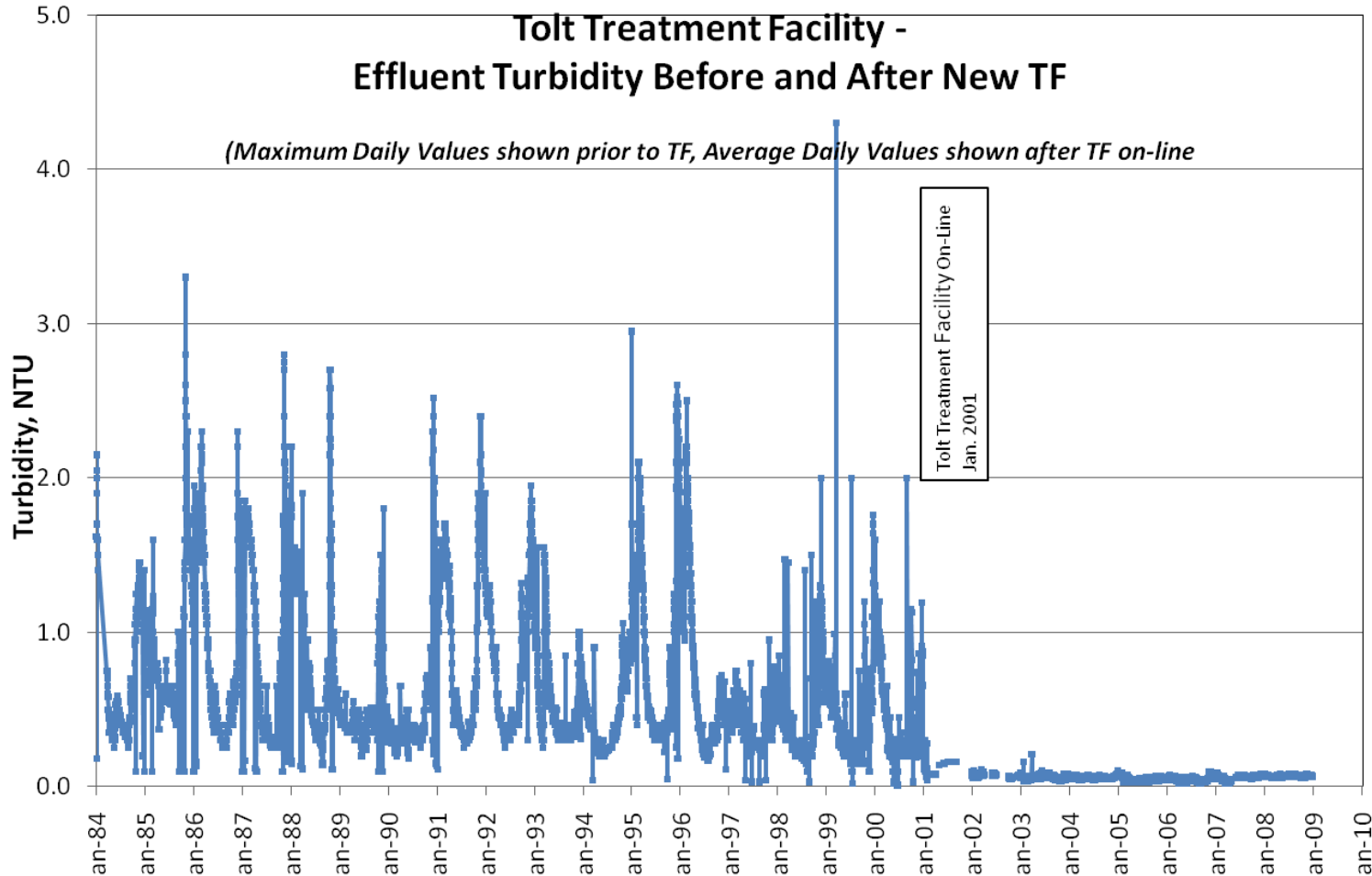
## Tolt Treatment Facility (\$91 Million)

120 MGD ozonation & high-rate direct filtration



# Source Water Treatment

## Tolt Turbidity: Before & After



# Treatment

## Cedar Water Treatment Plant (\$101 Million)

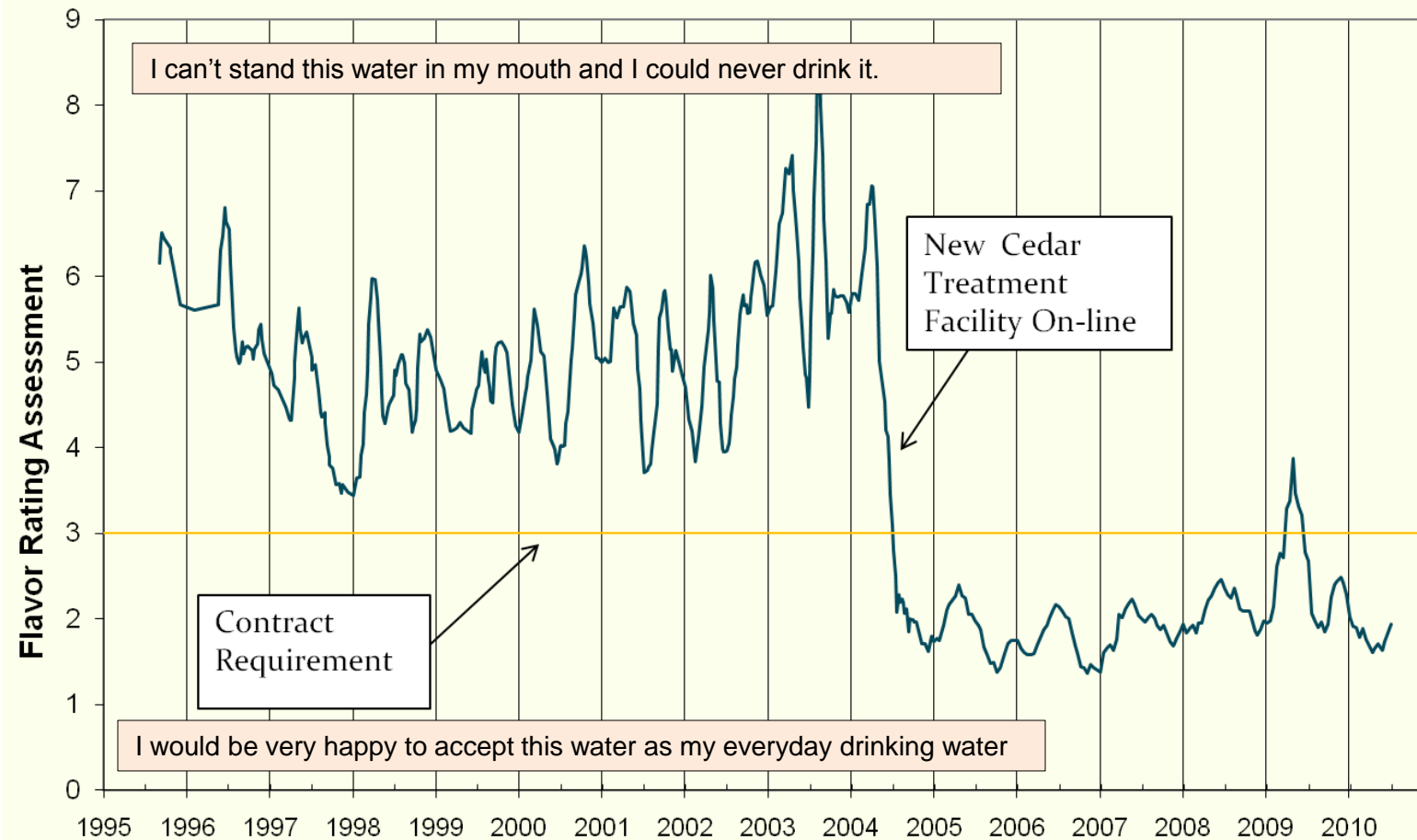
180 MGD ozonation & UV disinfection



Ultraviolet Treatment

# Treatment

## Cedar Finished Water Taste & Odor



# Transmission and Distribution Control Center (2007)

1970s Control Center



New Control Center  
(Capacity to add DWW)

# Transmission

## Tolt Pipeline #2 (\$100 Million)

### Drivers

- TPL1 burst in 1987, undermining confidence in the Tolt supply and reducing the capacity of the Tolt system
- Revised growth projections for East side communities

### Solution

Construct 16-mile TPL2 and replace key sections of TPL1. Cost: \$100M



### Benefits

Tolt transmission system is highly reliable and interconnected, with capacity for decades into the future (given demand reductions in recent years).

# Controlling CIP Costs

- Avoiding development of new supply
- Downsizing water storage and retiring facilities
- Deferring projects
- Taking advantage of bidding climate
- Applying asset management
- Using innovative contracting
  - Design-Build-Operate
  - General Contracting/Construction Management

# Controlling CIP Costs

## Asset Management

### Benefits

- Increases value of SPU's CIP portfolio
- Increases benefits and reduces costs
- Strong focus on customer service levels
- Fosters clear accountability and transparency
- Increases confidence in SPU's ability to choosing the right projects at the right time
- Cultivates a data-driven culture with emphasis on measurement and continuous improvement

# Asset Management

## Business Cases

### **Example:** Cedar River Watershed Road Abandonment and Bridge Replacement Program

- Developed transportation strategic plan
- Clarified road standards
- Increased number of roads to be abandoned
- Reduced number of bridges to be replaced
- Benefits: improved water quality and lower costs

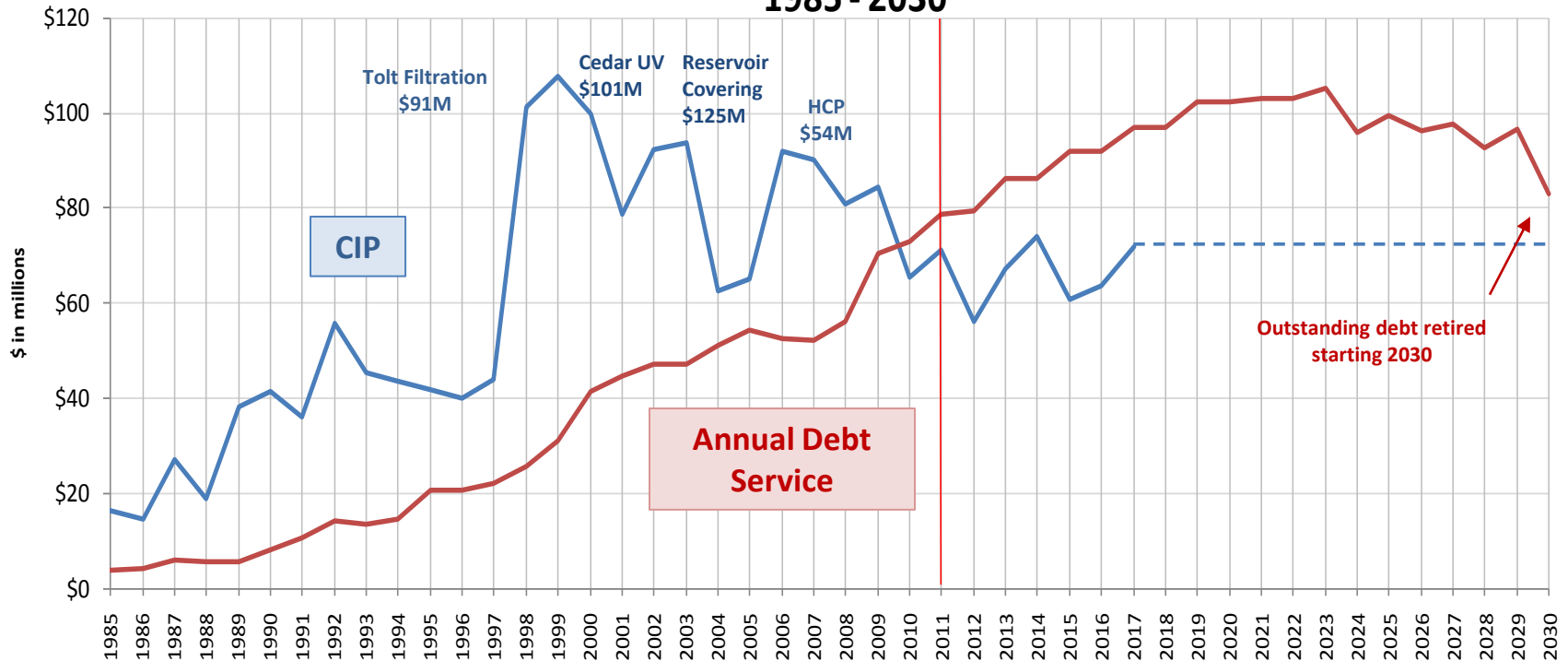
# Innovative Contracting Models

- Design-Build-Operate (Tolt & Cedar) – Allocates risk to contractor best able to manage all project phases.
  - Tolt Treatment Facility total cost reduction estimated at \$56M over 25 years. Cedar Treatment Facility cost savings estimated at \$45M.
- General Contracting Construction Management (Landsburg Fish Passage) – Provides cost and schedule certainty.
  - Allowed selection of firm with strong experience with in-stream construction, resolving constructability and construction sequencing issues and cost savings to project.

# Water Fund CIP

## CIP vs. Annual Debt Service

1985 - 2030



# Future Water CIP Spending Priorities

- Focus on distribution system
  - Most asset intensive: 1600 miles of watermain, 15 pump stations, 21,000 valves, 18,000 fire hydrants, 180,000 water service connections and meters.
  - Continue achieving core customer service expectations – quality, pressure, reliability; continuous analysis to optimize investments.
- Address renovation/replacement needs of facilities
- Morse Lake pumping
- Support transportation projects



# Questions?

# Seattle Regional Water System

Growth in Population and Water Consumption  
Seattle Regional Water System: 1975-2009

